

INVITATION TO SUBMIT A LETTER OF INTENT

CEATI International Inc.

Life Cycle Management of Substation Equipment and Apparatus Interest Group

Dear Technology Supplier,

I would like to take this opportunity to invite you to submit letter(s) of intent on projects in areas of interest to the CEATI International Life Cycle Management of Substation Equipment and Apparatus Interest Group (LCMSEA).

This Interest Group was formed, under CEATI co-ordination, by utilities wishing to share the costs of investigating and developing technologies and the process of applying such technologies in order to better manage the life cycle of substation equipment.

The following documents provide a description of the scope of the Interest Group and list projects already undertaken by LCMSEA or which are presently being developed.

Letter(s) of Intent explaining the project(s) that you propose to develop (max. 4 pages) should be submitted in Microsoft Word format, using the attached form, by January 19, 2012. They should be uploaded to the website at <http://prs.ceati.com/proposals/>, making reference to the project number "LCMSEA 2012 LOI".

IMPORTANT: Suppliers are encouraged to provide updated Letters of Intent in reference to previous submissions. Reference to the attached list of Completed and Current Projects may be of assistance in this area.

Your submitted letter of intent will be reviewed and evaluated by the LCMSEA group during their upcoming meeting, and you will be informed of the results of the group discussion in March. If your letter of intent is pre-selected for further consideration, the Interest Group may request a detailed submission for final evaluation at the group's Project Selection Meeting in the fall. Such a submission must comply with the Proposal Template and Guidelines for Proposals available online at <http://www.ceati.com/technology-providers/submission-guidelines>. Please be aware that CEATI is not bound to accept any submitted letters of intent.

Please note that the LCMSEA participating utilities' interest in projects is to more fully understand and learn the innovative approaches from the perspectives of:

- Concept/Technology
- Methodology/Technology to solve particular issues
- The strengths, weaknesses and limits of the Methodology/Technology
- Learn the Methodology/Technology in line with supporting illustrative data with such as documented test data and/or open-source-code spreadsheets demonstrating the Methodology/Technology
- Apply the methodologies to a limited size of utility data as needed to demonstrate the application and effectiveness of the work

- Interpret and draw conclusions regarding the usefulness of the approaches for broader application within the utility

It is essential that the LCMSEA utilities fully understand the concepts, methodologies, and details of the proposed work – if not the work is unlikely to be applied successfully in a sustainable way in the utility industry.

If you have questions, please don't hesitate to contact me by email or at the number below.

In addition, if you require technical assistance in preparing the Letters of Intent please do not hesitate to contact the LCMSEA Technology Coordinator Jack Shaver by email at jack.shaver@ceati.com or by phone at (204) 883-2111.

Regards,

Alex Mogilevsky
Director of Operations
(514) 866-5372
projects@ceati.com

FIELDS OF INTEREST

In order to reduce operating and maintenance costs plus improve the life expectancy of station equipment and apparatus, the Life Cycle Management of Substation Equipment and Apparatus Interest Group (LCMSEA) is dedicated to the evaluation of equipment and life cycle management of substation assets. The group objectives are to improve performance, reliability and availability of equipment while reducing associated costs. LCMSEA observes four main Focus Areas:

Focus Area 1 -Procurement & Installation: Specifications, vendor qualifications, quality assurance, delivery, installation, commissioning, warranties, problems encountered, etc.

Focus Area 2 -Maintenance Practices: Standards, best practices, routine and specialized testing, problems, etc.

Focus Area 3 -Condition Assessment: Tools and methodologies to determine condition (health index), remaining life, etc.

Focus Area 4 -Strategic Management: Tools and methodologies for managing the assets, reliability, risk management, financial restraints, compliance, etc.

Knowledge transfer and staff development is also a key issue and any works undertaken by LCMSEA address this need whenever they can.

Equipment

The LCMSEA interest group covers all equipment installed within the substation fence, but focuses on the following:

1. Transformers and LTCs
2. Breakers (all types including metalclad switchgear)
3. Gas Insulated Switchgear (GIS)
4. Instrument Transformers (PTs and CTs)
5. Arresters
6. Batteries
7. Insulating Mediums (gas, oil, etc.)
8. Bushings
9. Switches/Disconnects
10. Ground Grids
11. Reactive Support Equipment
12. Monitoring Equipment

Although not of primary interest, the following have been identified as related equipment:

13. Protection and Control
14. Telecontrol and Communications
15. HVDC
16. Hardware (Conductors, Insulators, Buses, Connectors, etc.)
17. Civil Works (Foundations, Structures, Fencing, etc.)

Topics of Interest:

The following topics have initially been identified the core topics to be addressed by LCMSEA:

- A) Specifications/Quality Control/Factory Testing

- B) Installation/Field Acceptance Testing/Commissioning
- C) Maintenance/Operating Methods and Practices
- D) Evaluating Current Plant/Equipment Condition
- E) Condition (Health) Assessment, Remaining Life
- F) Extending Current Life (Overhaul, Refurbishment)
- G) Maintenance Management Systems
- H) Repair/Replace Decision Tools
- I) Environmental/Safety Issues
- J) Ownership Costs/Asset Management
- K) Risk Management

LCMSEA PROJECTS TO DATE

Completed Projects

3001	Development of a New Gasket Material Test Method
3002	Monitoring of Transformer Condition by Dielectric Analysis
3003	Transformer Oil-Leak Mitigation Program
3004	Prediction of Remaining Life by the Analysis of Oil-Soluble Compounds in Power Transformers
3006	On-Line Transformer Condition Monitoring System
3007	Condition Monitoring of Circuit Breakers by Oil Analysis
3010	Investigation of Transformer Components
3011	Prediction of the Remaining Life (Life Left) for Transformer Oil as a First Indicator of Transformer Problems
3012	Application of the Recovery Voltage Method for the Condition Assessment of Power Transformers
3014	Development of a Life Assessment Method of Insulation System Condition in Power Transformer
3015	Effective Monitoring Technology for Circuit Breakers
3016	End of Life Decision on Circuit Breakers
3019	Circuit Breaker Asset Management - Information Requirements
3020	Safety Protocol for Restoration of Substations Involved with Fires / Explosions
3021	Safety Protocol for the Detection and Cleanup of SF6 Gas and SF6 Gas Decomposition Products in Buildings following Catastrophic Failure and Release from Indoor SF6 Gas Insulated Switchgears
3022	Transmission Stations and Transformers – Fire Protection and Prevention
3023	Transmission and Distribution Transformer Stations – Oil Containment, Spill Prevention and Spill Management
3024	Instrument Transformer Condition Assessment and Diagnostic
3025	Improved Condition Assessment and Diagnostic of CB and LTC by Particle and Sediment Analysis
3026	Prediction of Remaining Life of Power Connectors and Disconnect Switches
3027	MV and HV Air Break Disconnect Switch Arc Reach Study
3028	Evaluation of Online-Offline Techniques to Assess the Need to Replace CB Contacts for all Types (Oil, Air, SF6) of Circuit Breakers.
3030	Identifying and Documenting Existing Substation Ground Grid Detectors
3030B	Ground Grid Corrosion
3031	Survey Existing Wireless Hardware, Software Technologies for Power Transmission Utilities
3032	Survey of Existing Multi-Criteria Substation Equipment Asset Management Methods
3034	Identifying and Documenting Existing Electromagnetic Interference (EMI) Detectors that Forecast Insulation Breakdown in Substations
3035	Power Apparatus Bushing Condition Assessment and Diagnostic
3036	High Voltage Disconnect Switch Asset Management - Information Requirements
3037	Luminol Oil Aging Evaluation
3038	Vibro-Acoustical Condition Assessment and Condition Analysis of LTCs
3039	Health and Risk Index Tool for Transformers and LTCs

3040	Overview of Statistical Methods, Models and Analysis for Predicting Equipment End of Life
3041	Optimized Battery and Charger Condition Assessment and Life Extension
3042	End of Life Decision Support Model for Transformer Load Tapchangers
3043	Review and Summary of Key Standards and Guides for Station-Class Power Transformers
3044	SF6 Byproducts – Safety and Clean-up
3045	Total Ownership Costs of Substation Equipment
3047	Common Spare Substation Equipment & Apparatus Database
3048	Short Circuit Design Requirements for Power Transformers
3049	Electrical Protection of Telephone Cables Serving Substations
3050	State of the Art Review of Passive and Active Noise Mitigation Technologies for Substation Transformers
3051	Transformer Repair Facilities and Capabilities
3052	LTC Life Evaluation Ranking Factors
3053	Substation Equipment Failure/Save Database
3054	Substation Design Sharing
3056	Optimal Management of Aging Substation Assets: Life Cycle Costs and Repair/Replace Strategies, Phase I
3057	Ethylene Production in Transformers
3059	SF6 Gas Handling and Control
3060	Evaluation of Substation and Microwave/ Communication Site Battery Backup Options
3062	Condition Based Risk Management (CBRM), A Process to Link Engineering Knowledge and Practical Experience to Investment Planning
3066	Fuseless Capacitor Dielectric Testing

Current Projects

3055	Substation Equipment Asset Health Index: Breakers, Circuit Switchers, Switches/Disconnects, Current Transformers, Potential Transformers, Surge Arresters, and Capacitors
3061	Methanol: A New Marker for Paper Ageing
3064	Gasket Seals - Best Practices for Leak Prevention
3046A	Transformer Failure Modes: Causes, Detection and Monitoring - An Information Guide
3067	Substation Ground Grids – Additions and Modifications
3068	Power Circuit Breaker Reference Document
3071	Development of a Predictive Analysis Program for Evaluating the Success of Reclamation of Mineral Based Transformer Oils
3072	Power Transformer Specification Guide
3073	Review and Summary of Key Standards and Guides for Power Switchgear
3074	Contingency Planning Criteria: On-Site or Off-Site Spare Equipment, Mobile Transformers / Substations, Etc.
3075	Maintenance Strategies
3076	Optimal Life Cycle Management for Transformers: A Financial/Risk Model
3702	Soil Resistivity Testing
3703	Evaluation and Comparison of Grounding Test Equipment

3078	Substation Equipment Condition Parameters
3079	Gas Insulated Substation Seminar
3080	Total Ownership Cost Review
3081	Risk Level Assessment
3082	Instrument Transformers: Specification Guide Including a Summary of Key Standards and Guides
3083	Condition Assessment, Safety Improvement and Life Extension for Metalclad Switchgear
3084	Circuit Breaker/Switchgear Specification Guides
3085	Transformers: An In-Service Guide for New and Used Transformers (Factory Tests, Transportation, Storage, In-Service Tests)

SUBMISSION OF LETTER OF INTENT

LCMSEA Interest Group

Date:

Company Name:

Company Address:

Company: Phone:

Fax:

Website:

Principle Investigator(s): Name(s):

Phone(s):

Fax(es):

Email(s):

Focus Area Number: # Please refer to the attached LCMSEA Field of Interest document. For example, a project addressing the prediction of the remaining life of a circuit breaker would be FA3. Please use only one Topic Number.

Project Title: This should reference the work and be as descriptive and brief as possible.

Introduction: This should include a brief description of the work and the need for research or development.

Benefits: Describe foreseeable benefits to sponsoring utilities and the Electric Utility Industry.

Objectives: Describe the work to be undertaken and how it relates to the LCMSEA Interest Group objectives described in the LCMSEA Interest Group Topics of Interest.

Tasks: Where possible, the work shall be broken down into several separately identifiable tasks such as literature review, industry survey, data collection, sampling, etc.

LCMSEA Involvement: Describe any surveys, sampling or other works required by Interest Group participants. Include any intentions to visit sponsoring utilities to gather information.

Deliverables: The following information shall be provided:

- a) Details on the deliverables of the project including new or improved methodology, equipment, processes etc related to the Interest Group Topics of Interest.
- b) Final Report: Describe contents and format of the final report. It is expected that reports will have a recommendations section.

Budget: A preliminary (Budget) estimate of the costs shall be provided with a breakdown by the tasks identified above if applicable.

Schedule: A preliminary estimate of the time requirements for the project shall be provided.

Experience: Provide a brief description of previous works related to the Title.

Qualifications: Key personnel involved in the project shall be identified with a brief description of their qualifications related to the topic. Suppliers shall also identify any personnel who are not regular staff.

Please submit the form (in WORD format) at:

<http://prs.ceati.com/proposals/>

Your proposal must be in the format shown above

CLOSING DATE FOR RECEIPT OF PROPOSALS IS: January 19, 2012.